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ABSTRACT

A study was undertaken by the International Information Centre for Terminology (Infoterm) to examine the feasibility of establishing a network for the coordination of terminological work and the required technical and organizational structure for this type of collaboration. The first half of the study (1) provides an historical perspective of achievements and activities in terminological work to-date in five major areas--theory, terminological and lexicographical principles, preparation of terminologies, documentation in terminology, and training; (2) enumerates the various users of terminology and their requirements; (3) discusses Infoterm's past and present activities; and (4) provides an overview of areas where cooperation and planning in terminology are needed. Infoterm's proposals for establishing the network, which are presented in the second half of the study, incorporate recommendations from a panel of experts convened by UNESCO to evaluate the draft proposal (see related document). The new network would be known as TermNet and would function as an individual unit in the general information program of UNESCO with Infoterm serving as an international coordinating unit. Described are the network's aims and objectives, membership, benefits derived from establishing such a network, demands and restraints that members would have to accept in order to maximize opportunities for cooperation, and the role of an advisory panel. (JPF)

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STUDY

ON

THE DEVELOPMENT OF A NETWORK FOR TERMINOLOGY INFORMATION AND DOCUMENTATION

by Helmut Felber, Infoterm

(Section 6 "Project of a network" reflects the results of the discussions of experts meeting convened by Unesco (Vienna, October 19-21, 1977) for the evaluation of Infoterm's network project)

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Table of contents

		Page
	List of abbreviations	3
0	History	4
1	Introduction	4
2	Terminology work - analysis and present situation	5
2.1	Theory of terminology	6
2.1.1	The general theory of terminology	6
2.1.2	Research efforts in various countries	6
2.1.3	Theories of specialized terminologies	7
2.2	Terminological and lexicographical principles (guidelines)	7
2.2.1	ISO/TC 37	7
2.3	Preparation of terminologies	9
2.3.1	The present usage of terms	10
2.3.2	Standardization of terminologies	11
2.3.2.1	International unification of terminologies	13
2.4	Documentation in terminology	14
2.4.1	Literature documentation	15
2.4.2	Fact documentation	15
2.4.3	Present situation	16
2.4.4	Terminology banks	16
2.4.5	Neologisms	16
2.5	Training in terminology	17
2.5.1	Present situation	17
3	The users of terminology and their requirements	18
3.1	Subject field specialists and professionals (including teachers)	18
3.2	Specialized translators, interpreters, etc.	19
3.3	Information specialists (thesaurus authors, indexers, etc.)	19
3.4	Lexicographers and terminologists	19
4	Present task of Infoterm	19
5	Co-operation and planning in terminology	22
5.1	Need for co-operation	23
5.1.1	General theory of terminology	23
5.1.2	Terminological and lexicographical principles	23
5.1.3	Preparation of terminologies	23
5.1.4	Documentation in terminology	24

		Page
5.1.4.1	Terminology banks	24
5.1.5	Training	24
6	Project of a Network	25
6.1	Aims of TermNet	25
6.2	Members of TermNet	28
6.3	Implementation of TermNet	28
6.4	Infoterm's contribution to TermNet	29
6.4.1	Documentation	30
6.4.2	Information	31
6.4.3	Co-ordination	32
6.4.4	Consultancy	32
6.4.5	Training	32
6.4.6	Research	32
6.5	Members' benefit from TermNet	32
6.6	Demands on TermNet members and restraints they would have to accept in order to maximise the opportunities for co-operation	32
6.7	Advisory panel	34
6.7.1	Membership	34
6.7.2	Functions	34
	References	35

List of abbreviations

AFNOR	Association française de normalisation
AILA	Association Internationale de Linguistique Appliquée
ALSED	Anthropology and Language Science in Educational Development, Unesco
GIP	General Information Programme, Unesco
IEC	International Electrotechnical Commission
IEV	International Electrotechnical Vocabulary
Infoterm	International Information Centre for Terminology
ISO	International Organization for Standardization
ISO 1951	ISO Standard 1951
ISO/INFCO	Standing Committee for the Study of Scientific and Technical Information on Standardization
ISO/R	ISO Recommendation
ISO/SC	Sub-Committee of ISO
ISO/TC	Technical Committee of ISO
ISO/WG	Working Group of ISO
IUPAC	International Union of Pure and Applied Chemistry
IUPAP	International Union of Pure and Applied Physics
KNTT AN	Komitet Naučno-Tehničeskoj Terminologii, Akademija Nauk (USSR)
LEAT	World Information Centre for Legal, Economic and Administrative Terminology
TermNet	International Network of Terminology Activities
UNISIST	Unesco's Intergovernmental Programme of International Co-operation in Scientific and Technological Information
WHO	World Health Organization

0 History

In compliance with a recommendation made by the participants of the First Infoterm Symposium in Vienna from 9 to 11 April 1975 Infoterm prepared a "Study on the development of a network of terminology preparing bodies and terminology documentation centres". This study was submitted for evaluation to a panel of experts convened by Unesco in Vienna from 19 to 21 October 1977. It was subsequently redrafted in order to reflect the opinion expressed by the expert panel and renamed "Study on the development of a network for terminology information and documentation".

Acknowledgement is due to Professor Sager, Rapporteur of this meeting, for his assistance in redrafting this study.

1 Introduction

Terminology is relevant to subject specialists, translators, interpreters, information specialists and all those involved in technical and professional communication.
During the last decades terminological activities have increased considerably because of

(1) rapid progress in the basic sciences (monolingual terminologies)

(2) equally rapid development of international co-operation in science, technology, commerce etc. (multilingual terminologies)

(3) use of computers for storage and retrieval of information (thesauri, terminology banks).

This development of effective communication tools is part of the "development of the information infrastructure" which is one of the UNISIST objectives.
Agreement on terminology is the basis for effective communication, and can only be achieved by widespread co-operation.
In order to explore possibilities of co-operation in this field the International Information Centre for Terminology (Infoterm) convened a Symposium on International Co-operation in Terminology in Vienna from 9 to 11 April 1975.
At this symposium the following recommendation was adopted:

The participants of the Symposium on International Co-operation in Terminology (Vienna, 9th-11th April 1975)

realizing the growing importance of the unification of terminology and the co-ordination of terminological projects for effective communication among scientists, technologists and specialists of all fields of knowledge and for the progress of research and technology in general,

noting with satisfaction that under a contract with Unesco an International Information Centre for Terminology (Infoterm) was created, which within the framework of UNISIST, undertakes

2.3 Preparation of terminologies

2.4 Documentation in terminology

2.5 Training in terminology

2.1 Theory of terminology (terminology science)

Fundamental research lies at the basis of all terminology work [3]. These research efforts comprise two areas:

(1) the general theory of terminology [3] [4] [5]

(2) theories of specialized terminologies (subject fields) [6].

2.1.1 The General theory of terminology is based on linguistics, logic, logistics, ontology, information sciences and the knowledge structure of specialized subject fields [3]. It deals with problems which are common to nearly all languages. The results of this research are the basis for the elaboration of terminological and lexicographical principles which - agreed upon on an international level within ISO - are published as ISO Standards.
These principles provide all those preparing terminologies with guidelines in order to achieve greater efficiency and uniformity in their work (Infoterm has published a survey on the exisiting terminology guidelines in Infoterm Newsletter 4).
Commissions of Academies of Sciences and Institutes at Universities are engaged in studying the general theory of terminology [7] [8] [9] [10] [11] [12].

2.1.2 Research efforts in various countries

(1) Austria
Comprehensive studies by Prof. Wüster resulted in his book "Die internationale Sprachnormung in der Technik" [International standardization of language in engineering] [1]. This book was the impetus for setting up ISA 37 "Terminology" the forerunner of ISO/TC 37.
A research institution with a large terminology library has been developed by Wüster in Wieselburg (Austria) in the last forty years [3] [13] [14] [15] [16] [17].

(2) Canada
In the last years the theory of terminology is being intensively studied at Canadian Universities and by the Régie de la langue française in Québec [11] [18] [19].
From 1971 to 1975 and in 1977 five international symposia on terminology were held [20] [21] [22] [23] [24].

(3) Czechoslovakia
At universities and the Academy of Sciences the theory of terminology is being studied [5]. Two symposia were held at the Institute for non-Slavic languages at the Agricultural College in Prague [25] [26] [27] [28] [29].

a) to coordinate terminology work on a world wide basis and especially activities of collecting, evaluating, and disseminating (including selective dissemination) information on bibliographical material on terminology and other terminology-related activities such as projects and training,

b) to establish close contacts with the appropriate national, international and intergovernmental organizations concerned, particularly with the International Clearinghouse in Warsaw,

c) to assume the management of an international and interdisciplinary committee for the coordination of terminological activities provided that such a committee should be established and should desire the assistance of the International Information Centre for Terminology,

appreciating the achievements of Infoterm and fully aware of the fact that Infoterm can carry out the duties assigned to it only if close and lasting co-operation can be established among existing terminological centres and those yet to be formed,

recommend that

Infoterm take immediately appropriate action with a view to establishing a world-wide network for the coordination of terminological work, following a detailed study to be made in consultation with competent organizations in the field; this study should include the technical and organizational structure of this type of collaboration, should propose methods for the collection and publication of neologisms, and consider the possibility of setting up future advisory bodies; the committee mentioned above under c) should be constituted as soon as practicable.

2 Terminology work - Analysis and present situation

The late Professor Wüster has provided an exhaustive view of terminology work in two books:

(1) Internationale Sprachnormung in der Technik [1]

(2) The Road to Infoterm (Two reports prepared on behalf of Unesco: Inventory of sources of scientific and technical terminology; A plan for establishing an international information centre (clearinghouse) for terminology) [2]

This section of the report gives an outline of achievements and activities in terminology work since the development of a network for terminology will have to start from this situation.

Terminology work can conveniently be divided into five major areas, which are however interdependent and interacting:

2.1 Theory of terminology (terminology science)

2.2 Terminological and lexicographical principles (guidelines)

(4) Federal Republic of Germany
At universities and other institutions the theory of terminology is studied [119][120].

(5) German Democratic Republic
Studies in the theory of terminology are in progress at various universities [4][30].

(6) USSR
At the Academy of Sciences (Committee for Scientific and Technical Terminology) and at different Universities, fundamental research is carried out in the theory of terminology [7][8][9][31][32][33][34][35][36][37][38][39].
In 1967 the Academy of Sciences held a symposium on "Linguistic problems of scientific and technical terminology" in Leningrad.
At the Lomonosov University in Moscow two outstanding symposia were held in 1969 and 1971 [40][41].

2.1.3 Theories of specialized terminologies deal with the principles governing the formation of concepts and terms in individual subject fields such as medicine, biology, chemistry, physics etc. The results of this research are the systems of concepts and their terms as well as rules for the formation of concepts and terms such as rules for the biological nomenclature etc. [6][42][43][44]. Research is carried out for one language or for several languages (comparative language studies), for one subject field or for several subject fields (comparative subject field studies). Specialized professional institutions such as WHO, IUPAC, IUPAP, IEC are engaged in this type of work.

2.2 Terminological and lexicographical principles (guidelines)

The theory of terminology is the basis for the preparation of terminological and lexicographical principles at international and national level.

2.2.1 ISO/TC 37.- 40 countries (13 Participating Members and 27 Observing Members) and 40 international organizations as liaisons participate in the elaboration of the terminological principles of ISO/TC 37 "Terminology (principles and co-ordination)", the Secretariat of which is held by the Austrian Standards Institute [45]. Since 1951 ISO/TC 37 has prepared six ISO Recommendations and one ISO Standard, which represent a very important instrument to world wide unification of terminology work. These are:

Vocabulary of terminology

ISO/R 1087-1969 "Vocabulary of terminology". It contains terms and definitions of 95 concepts used frequently in theory of terminology and linguistics.

Guidelines for the preparation of classified vocabularies

ISO/R 919-1969 "Guide for the preparation of classified vocabularies".

Instructions as regards technical work are given for compilers of vocabularies.

Naming principles

ISO/R 704-1968 "Naming principles". It provides principles to be observed when constructing concepts, systems of concepts, terms and definitions.

ISO/R 860-1968 "International unification of concepts and terms". In this ISO Recommendation the advantages and possibilities but also the limits of the international unification of concepts and terms are presented.

Layout of classified vocabularies

ISO/R 1149-1969 "Layout of multilingual classified vocabularies". The technical work in terminological lexicography is described.

ISO/R 639-1967 "Symbols for languages, countries and authorities". This ISO Recommendation explains the application of symbols for languages, countries and authorities to be used in terminological work; the symbols as such are listed in tables.

ISO 1951-1973 "Lexicographical symbols, particularly for use in classified defining vocabularies". In this International Standard lexicographical symbols and their application are presented.

These documents are at present being revised.

There are also national versions of some or all of these documents in France, Germany, Netherlands, Poland, Portugal, Sweden, Spain and United Kingdom. (A survey can be found in Infoterm Newsletter 4) [46].

ISO/TC 37 has the task to elaborate terminological principles which are independent of subject field and language so that they can be applied generally.

The terminological and lexicographical principles mentioned above were applied in their entirety for the first time in the pilot project "The Machine Tool" undertaken under the direction of Prof. Wüster on behalf of the United Nations Economic Commission for Europe [47].

ISO/TC 37 reconstituted WG 1 "Terminological principles" and WG 3 "Layout of vocabularies" in June 1974. In order to meet future needs it has in addition set up WG 4 "Computational aids in terminology and lexicography" with the aim to prepare a standard format for the exchange of terminological data [48]. Terminology banks already in existence in some countries could increase their efficiency by an interchange of terminological data. They urgently need this exchange format.

The International Electrotechnical Commission (IEC) has issued "Directives relating to the preparation of the International Electrotechnical Vocabulary (IEV)" [49] which are in line with the terminological principles prepared by ISO/TC 37.

Terminological principles are also envolved for their specific needs by

terminological institutions such as Vsesojuznyj naučno-isledovatel'skij institut tehničeskoj informacii, klassifikacii i kodirovanija (VNIIKI, USSR), KNTT Akademija Nauk (USSR), Règie de la langue française (Canada), etc. [7][31][32][50][51][52] and by other organizations such as WHO [53].

However ISO/TC 37 functions as a focal point for the preparation and acceptance of international terminological principles which are to be published as ISO Standards.
The results of new developments in the theory of terminology and experience gained in the preparation terminologies are continually examined by ISO/TC 37 as to their appropriateness for inclusion in the terminological principles of TC 37. Furthermore, the experience of terminological institutions with the application of these principles are collected by the Secretariat of TC 37 for a revision of these principles. Such a feedback is necessary.

However, it is not sufficient to elaborate terminological principles agreed at international level, to publish them as ISO Standards, and to bring them up to date by revisions. What matters is their implementation. Only the widest possible application will result in the desired unification of terminology work. Therefore, authoritative organizations such as Unesco support the application of these principles [54].

Differing terminological principles used by terminological institutions in the world should be harmonized with the ISO Standard and the Recommendations of ISO/TC 37. Only a world wide application of unified principles permits the exchange of terminological data within a network [46].

2.3 Preparation of terminologies

Preparation of terminologies consists of collecting, analysing, harmonising terminological data (terms, synonyms, equivalents in other languages, definitions, context, etc.), the elaboration of relationships between concepts and the elaboration of systems of concepts [55]. The relationships between concepts and the systems of concepts are elaborated by subject specialists of the subject field the terminology of which is being prepared [56][57][58].

At present in general three methods of preparing terminologies are applied, namely:

(1) the method of preparing classified vocabularies with definitions. The result is a monolingual or multilingual terminological vocabulary. For a specialized field the system of concepts is elaborated and the definitions corresponding to the concepts are given. Then the corresponding terms for these concepts are chosen (the synonyms preferred, permitted and deprecated terms are included). If possible figures are also included. In such a vocabulary the terms are arranged in classified order.
This is the scientific approach applied by subject specialists. A strict coincidence of the meanings of terms in different languages is only possible, if concepts and system of concepts are unified;

(2) the method of preparing glossaries. Terms are collected, defined and listed in alphabetical order.
This method gives rise to discrepancies owing to overlap or inconsistencies of definitions.
Sometimes instead of a definition the context of the term is given;

(3) the method of preparing translating vocabularies. For the terms of a source language the corresponding equivalent terms in one or more target languages are found. The terms of the source language are then listed alphabetically with the corresponding equivalents. Since concepts and system of concepts differ from language to language the meanings of the terms of the source language seldom coincide with those of the equivalent terms in the target language(s). Such vocabularies are mostly used by translators.

The application of unified terminological principles and methods of terminological lexicography are recommended so that terminological data can be exchanged.
Only the first of these methods is scientifically sound. Since a term never occurs in isolation but occupies a certain place within a system of concepts advanced terminological methods require terminology research, i.e. investigation into the relationships between concepts and mapping out of the entire system before the appropriateness of terms can be established [55][56][57].
Terminology research is to be carried out by subject specialists in co-operation with linguists.

In the case of multilingual terminologies this procedure is even more important and has to be carried out for each language separately or preferably independent of the available lexical structure of any one language in the first instance.

Preparation of terminologies is concerned with either

2.3.1 the study of the present usage of terms
or 2.3.2 standardization of terminologies

2.3.1 The present usage of terms is registered in the form most suitable to the user [118], e.g. as a glossary, a terminological vocabulary, a translating vocabulary, a terminological card file, a terminological data file in a computer.
The result of such a compilation can be a valuable basis for terminology research and standardization of terminologies.
The present usage of terms is however often registered without any coordination and without utilizing existing terminological sources. Thus sometimes conflicting vocabularies dealing with the same subject field and the same language combination are published, whereas there is a deficiency in other subject fields and language combinations.
A great part of this effort is devoted to the production of translating aids (translating vocabularies).

Many dictionaries are unreliable and do not meet scientific (high quality) requirements, because they are not prepared according to scientific methods (terminological principles). Inexact vocabularies are a great danger for the user and above all for terminology banks which have incorporated the content of such vocabularies in their holdings.

2.3.2 Standardization of terminologies.- Difficulties in communication arise mostly through the fact that terms in the same language have different meanings or corresponding concepts in different languages do not coincide and that the systems of concepts differ from language to language. These difficulties can be overcome by agreement on the concepts (meanings), terms, relationships of concepts and system of concepts by competent commissions of experts and by approval and recommendation of the terminology established in such a way through a competent authority [59][60].
In such a way the terms, the definitions and the system of concepts are standardized.
Standardization of terminologies is, not only restricted to science and technology. At present in social sciences, geography etc. standardizing efforts are being made [61][62][63].

This procedure, which takes place on national and international level, is called standardization of terminology [1]. Responsible for the standardization of terminology at international level is the International Organization for Standardization (ISO) and on national level the national standards institutions, which are members of ISO.

But in general any national or international authority can standardize the terminology of its field of activity.

While study of usage of terminology results in an inventory of exisiting terminologies (in finding out the "is-standard") standardization of terminology aims at introduction of recommended terminologies (a "should-be standard").
Therefore, standardization of terminology is conscious formation of terminology and their recommendation, thus an attempt to regulate technical language.

(1) ISO.- The International Organization for Standardization (ISO) comprising at present 65 national members and 16 correspondent members and nearly all important international professional and technical organizations as liaisons is heavily engaged in standardization of terminologies. The ISO Central Secretariat is situated in Geneva. The Secretariats of the individual Technical Committees, Sub-Committees and Working Groups respectively are held by one or the other of the national members.

There are some 167 Technical Committees (TCs) covering nearly the whole range of human activity. These Technical Committees consist of parti-

cipating national Members (P-Members), observing national Members (O-Members), and liaisons (international organizations). Only P-Members have a right to vote. National Members are free to participate in any ISO/TC as P or O Member. Nearly every ISO/TC has a Sub-Committee or Working Group dealing with the terminology of its scope [60].

More than 160 terminological ISO Standards have been published so far dealing with paper and pulp, coal and coke, petroleum industry, refractories, rubber, plastics, detergents, starch, sieves, spices, fruit and vegetables, paints and varnishes, certain textiles, textile machinery, cork, aromatic hydrocarbons, pesticides, nuclear energy, dentistry, metallic coatings, statistical methods, liquid flow measurement, timber, wood-based panels, cement, gears, IC engines, magnetic compasses, lifting hooks, pallets, certain branches of road vehicles and industrial trucks, small tools, rolling bearings, pulleys and belts, documentation, building construction, freight containers, micro-copying and data processing.
It should also be borne in mind that a few terms with definitions can be found in nearly any ISO Standard.
A bibliography of the terminological ISO Standards was published by ISO [64].
The terms standardized by ISO are stored in Normaterm the terminology bank of AFNOR in Paris (see 2.4.3.1).

(2) The national members of ISO carry out standardization of terminologies for their respective countries [2][65][66][67]. At present 10 000 terminological standards are in existence in 52 countries and 32 languages as well as for international use. In 1955 Unesco published a bibliography of standardized vocabularies, which was prepared by Wüster [68]. An updated version is being prepared by Infoterm and will be published by Verlag Dokumentation München. In the USSR VNIIKI has published two bibliographies on standardized vocabularies [69][70].
In France AFNOR has established a computer file of terms appearing in French and ISO Standards and keeps it up to date. Recently the holdings of this file were published in two volumes [71][72].

(3) IEC.- As early as 1906 the International Electrotechnical Commission (IEC) started with terminology work. The first edition of the International Electrotechnical Vocabulary (IEV) appeared 1938 comprising 311 pages and about 2000 scientific and technical concepts. The second edition of the IEV consisted of chapters published between 1949 and 1970 comprising 24 subject groups, with about 8500 scientific and technical concepts.

Now a new procedure is applied. There will be no more complete editions but each chapter is published depending on the need for revision.

The definitions and pertinent terms will be elaborated from the beginning in English, French and - if possible - in Russian.

The IEV has English, French and Russian as languages of definitions and the following additional languages: German, Spanish, Italian, Dutch, Polish and Swedish.
Many national standardizing organizations have adapted chapters or parts of chapters of the IEV as standards.
More recently IEC has published as index of all terms appearing in the IEV [73].

(4) Other authorities.- Terminology Commissions working in national or international authorities also prepare terminologies which are recommended for use in their particular field of activity [21][23] [74][75]. Thus unification of terminology use in these authorities is reached.

(5) Multinational firms also feel the need for regulation of terminology within their field of activity, among others Philips, Siemens, BBC.

2.3.2.1 International unification of terminologies is a continuing task. The international unification concerns particularly:

(1) the concepts and systems of concepts
(2) the definitions
(3) the written form of terms
(4) the internal form, i.e. the literal meaning of terms (for instance the widened end of taper key is called in different languages "heel", "head" and "nose").

International unified terminologies do not only represent the basis for unambiguous international communication but also the basis for the functionning of international information networks [77]. The need for such international unified terminologies is felt not only in regional systems such as that of the Council of Mutual Economic Assistance (CMEA) [78] but also in international organizations and multinational firms.

However, all efforts of standardization of terminology are in vain if the standardized terms are not propagated and used. They must be widely publicized. International unification of terminology is a task of standardization [59].

There are two methods:
The first method is to discuss at international level the definitions of terms standardized in a given subject field by national standards institutions and to try to harmonize the differing concepts (meanings) and systems of concepts.
The second method is to agree immediately at international level on concepts, i.e. definitions and on the systems of concepts in ISO meetings or by correspondence of the ISO members participating in the terminology project in question. Terms in the official ISO languages, namely English, French and Russian are then assigned to these concepts. If the national members having as mother tongue a language other than English, French or Russian are interested in this terminology project they can add the terms in the language of their respective country which will be published as supplement to the terminological ISO Standard in question.
The second method is mostly applied in new fields.

The endeavour of unification of terminologies however, is not restricted to different languages, it is also applied to one language which is spoken in different countries (and sometimes on different continents) such as English, French, German, Spanish. For example the French speaking countries, particularly France, Belgium and Canada co-operate closely to achieve unified terminologies. In this co-operation are included authorities, private enterprises and universities. In this respect the activities of the Office de la langue française (Office for French language) which is a department of the Ministry of Education in Québec, is worth mentioning [20][21][22][23][24]. For the French language an international council is responsible, namely the Conseil International de la Langue Française (CILF), the Secretariat of which has a comprehensive terminological card file in Paris [74].
Within the German speaking countries the Standards Organizations of Austria (ON), Germany (DIN) and Switzerland (SNV) combine their efforts for some terminological projects to reach a unified German terminology, for instance in the field of packaging, EDP, and other fields [79][80][81]

Regional unification of terminologies was started in 1966 by the members of the Council of Mutual Economic Assistance. The following countries participate: Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania, USSR [78].

It is felt that unified terminology is absolutely necessary for the exchange of ideas and goods. The All-Union Research Institute for Technical Information, Classification and Coding (VNIIKI) in Moscow, which coordinates standardization of terminologies in the USSR, contributes to a very large extent to this undertaking.

In preparation of this task Infoterm elaborated the "International Bibliography of Standardized Vocabularies" which is being kept up to date (see 4(1)). The implementation of the international unification of terminologies is a task to be undertaken by ISO in co-operation with all competent scientific and professional organizations of the world.

For some time ISO/TC 37 has been studying an "International key to terminology", which consists of international word elements, having the same or nearly the same meaning in many languages, and rules for the correct constructing of international terms [82].

2.4 Documentation in terminology

Preparation of terminologies is very expensive and time-consuming. Furthermore, it requires the co-operation of highly qualified subject specialists trained in terminological principles. Therefore, any duplication and waste of efforts should be avoided. This can be achieved by documentation in terminology which provides also the basis for terminology planning [83].

Documentation in terminology consists of:

2.4.1 literature documentation

2.4.2 fact documentation (conventional vocabularies and terminology banks)

2.4.1 Literature documentation is the collection, recording and analysis of terminological publications and the preparation of secondary literature (bibliographies etc.) and tertiary literature (bibliographies of bibliographies).

Such terminological publications are:

(1) terminological principles, guidelines for terminological work, etc.

(2) terminological standards (standardized vocabularies)

(3) specialized vocabularies

(4) terminological books and periodicals

(5) terminological articles

Bibliographies and bibliographies of bibliographies can be prepared as conventional lists or books or stored on magnetic tape. For information centres the use of bibliographies on microfiche could facilitate their service.

2.4.2 Fact documentation is the collection, recording and analysis of terminological data. Terminological data are details of a concept. Preferred, admitted, and deprecated terms with equivalents in one or several languages, definition, context, semantic data, source, quality indicator (standardized or recommended term, etc.), classification or subject field, etc.
Terminological data can be processed manually, mechanically or automatically. The conventional method is based on a card file, conventional type-setting, and publication as vocabulary.

Advanced methods use electronic data processing (EDP) for the development of a terminology bank. Terminological data are recorded in machine-readable form and registered on magnetic tape. The processing is done by computer following special programmes developed for terminological purposes. The terminology bank can be consulted on monitor or used for the production of terminological lists of any kind and vocabularies (computer print out, photo-typesetting or microfiche)

However, it should be particularly stressed that the usefulness of a terminology bank depends to a high degree on the quality of terminological data stored.
Unreliable terminological data can give rise to more confusion than they provide benefit.
Therefore it is necessary to indicate the terms and definitions elaborated by competent commissions with authority symbols. Competent technical and professional organizations should be encouraged to prepare the terminologies of their respective fields of activitiy in the interest of better communication.

2.4.3 Present situation.- The number of documentation centres for terminology in the world is not very great.
They are affiliated to translation services, standards institutions, research or documentation organizations. Their structure depends on the need they serve. Most of them collect and analyse terminological facts. Some of them use EDP for storage and retrieval of terminological facts. Some store and retrieve in addition bibliographic data on terminological literature. EDP is also used to produce different kinds of lists of terms and for the preparation of vocabularies by phototypesetting.
However there are also sections in libraries which collect dictionaries, vocabularies and literature on applied linguistics and which prepare bibliographies.
The exchange of bibliographic data and terminological facts is at present difficult, since different bibliographic descriptions for terminological literature, different formats for concept entries, and different classifications are used.

2.4.4 Terminology banks.- In the last years many terminology banks were established, many others are being planned. Such terminology banks exist in Canada [84][85][86][87], France [88][89], Federal Republic of Germany [90][91][92][93][94][95], German Democratic Republic [96][97][98], South Africa, Sweden [99][100], USSR [101][102][103] as well as with the European Communities [104][105][106]. Some of them collect standardized terminology only (AFNOR, VNIIKI). A computer program called GENTHES was developed to generate automatically relationships between concepts [58].

A session of the "First Infoterm Symposium. International Co-operation in Terminology" held in Vienna in April 1975 dealt with terminology banks. An international symposium on computer aided terminological lexicography was held in Dresden (GDR) in February 1975 [107].
Infoterm published both a list of terminology banks and a list of publications on terminology banks in Infoterm Newsletter 1. A section on terminology banks can also be found in the "World Guide to Terminological Activities" (Infoterm Series 4, see 4(8)).

2.4.5 Neologisms.- For progress in science, technology and other fields of human knowledge it is necessary to create continuously new concepts and their respective terms. When a new concept is created in one language the missing concepts and terms in other languages form an impediment to communication [108].
As a result new terms are coined without the necessary knowledge on forming terms and without considering the place the new concept has in the respective system of concepts of the subject field in question. The proliferation of new terms created by chance strongly disturbs communication.

2.5 Training in terminology

Terminology work cannot be carried out without adequately trained people [109]. Continuous learning for those engaged in terminology is necessary. On the one hand university courses for general theory of terminology and for specialized theories of terminologies including postgraduate courses are required. On the other hand, seminars with training courses in terminology, terminological lexicography and terminological documentation at national and international level must be held by competent organizations (Unesco, Standards Institutions, and professional organizations).

Training has to be provided for:

(1) research in the general theory of terminology by linguists or subject field specialists;

(2) research in specialized terminologies. Either linguists receive training in terminological principles and acquire knowledge in subject-fields they want to deal with, or subject field specialists receive training in terminological principles;

(3) application of specialized terminologies. Training in specialized terminologies for interpreters, translators, editor, etc.;

(4) documentation in terminology. Training in documentation and information, including electronic data processing, terminological principles and specialized terminologies. Priority is given to training in methods of documentation.

The International Association for Applied Linguistics (AILA) has set up a Commission for Terminology and Terminological Lexicography, which is studying possibilities for training courses for (1) to (3).

At the First European Symposium on specialized languages held by AILA and Unesco-ALSED in Vienna from 26 to 28 August 1977 Recommendations on the training in the general theory of terminology at university and professional level were adopted [110][111].

Prof. Rondeau (University of Ottawa) is studying the necessary elements for holding courses on the theory of terminology [112].

2.5.1 Present situation.- Training in general theory of terminology and in the specialized theories of terminologies exists at university and professional level [109][113][114] [115][116][117].

2.5.1.1 General theory of terminology.- Courses are held at the following universities:

(1) Austria
University of Vienna, Institute of Linguistics [109]

(2) Canada
University of Montreal, department of linguistics [23]

University of Québec, [118]
University of Ottawa, Department of linguistics

(3) Czechoslovakia
Technical University for agriculture, Prague [5]

(4) Denmark
The Copenhagen School of Economics and Business Administration [115]

(5) Federal Republic of Germany [119]
Free University of Berlin
University of Mainz
University of Saarland (course intended)

(6) France
University of Paris [120]

(7) German Democratic Republic
Technical University of Dresden, Institute of Applied Linguistics [87]

(8) Great Britain
The University of Manchester, Institute of Science and Technology, Department of European Studies and Modern Languages [117]

(9) South Africa
University of Pretoria

(10) USSR
Moscow State University "Lomonosov"
Moscow Polygraphic Institute [10]
University of Samarkand [39]

2.5.1.2 Application of specialized terminologies.- Courses are offered at a great number of universities, at interpreter's and translator's institutes [30].

3 The users of terminologies and their requirements

Concepts are elements of thinking. They are the basis for any mental operations (ordering of scientific ideas, etc.).
Concepts, however cannot be used directly in human communication; they have to be represented by terms or other symbols. Therefore terminology plays an eminent role in communication of experts and professionals in any subject field as well as in education, research, editing as well as particularly in documentation and information.
This means that all specialists and professionals are users of terminologies. They demand that terminologies be an efficient tool of communication, i.e. that terms be clear and unambiguous.
In general, there are four groups of users of terminology with specific requirements, namely:

3.1 Subject field specialists and professionals (including teachers) need terminologies of their subject fields in classified form for research, development or any other professional work.

They need monolingual and multilingual classified defining vocabularies. The system of concepts and definitions are essential for subject specialists.

3.2 Specialized translators, interpreters, etc. need for their work above all translating dictionaries, in which equivalent terms in one or more target languages are given side by side with the terms in a source language. The terms should be provided with a context and if possible with explanations (including illustrations).

The translating dictionaries in alphabetic order should be based on classified vocabularies so that they comprise all concepts of the subject field in question.
The problem to be solved by terminologists is to provide for the translators equivalent terms of newly created concepts as quickly as possible so that the translators are themselves not compelled to coin terms for new concepts (see 2.4.5).

3.3 Information specialists (thesaurus authors, indexers, etc.) need terminologies in classified form, i.e. classified vocabularies. They need above all the relationships existing between concepts so that they can develop and update documentary languages for indexing and information retrieval. The relationships of concepts are essential for information specialists.

3.4 Lexicographers and terminologists are the most demanding and assiduous users of terminologies. They require all forms of terminologies for consultation in their work and as models for new work. Since the coinage of new terms is a last resort lexicographers and terminologists will constantly search the work of their colleagues for solutions to existing problems.

4 Present task of Infoterm

The necessity of having information on past, present and future work in terminology was felt rather early. However, it was only possible within the framework of the General Information Programme (former UNISIST), developed by Unesco since 1971 [91], to create a focal point for the co-ordination of terminological activities [13]. Thus the International Information Centre for Terminology (Infoterm) was established at the end of 1971 in Vienna with the assistance of Unesco and it was affiliated to the Austrian Standards Institute (ON), because Prof. Wüster, one of the most eminent scholars and scientists in terminology had already developed in Wieselburg (Austria) a research and documentation centre for terminology, which was a focal point of international terminological activities.
Infoterm has the function to coordinate terminological activities all over the world and carries out the following activities:

- Collection and analysis of terminological publications from all over the world, particularly of terminological standards and principles and of specialized dictionaries.
- Preparation of bibliographies of vocabularies.
- Information on terminological libraries and - as far as possible - on their holdings.
- Extensive dissemination of information on terminological publications which are already in existence or are in preparation.
- Information on terminological courses; providing advice to institutions, particularly in developing countries, when terminological projects are being undertaken.
- Investigation into the possibility of interconnection of terminological word banks.

No specific subject field or language is excluded.
Funds at present only permit a very small staff.

The activities of Infoterm have been focused in the past years on:

(1) International bibliography of standardized vocabularies.- Starting with Wüster's "Bibliography of monolingual scientific and technical glossaries", Vol. 1: National Standards, published by Unesco in 1955, and continuations which appeared in "Lebende Sprachen", "DIN-Mitteilungen", and "Babel", this bibliography has been kept up to date. At present about 10 000 references have been recorded.
In 1975 investigations into the usefulness of the application of a computer programme for the development of a data bank to be used particularly for a photo-type-set publication were carried out. The programme TEAM (Terminologie-Erfassungs- und Auswertungs-Methode) of Siemens, which is intended for terminology banks, has been adapted for the recording of bibliographic data on terminological standards. The bibliographic data recorded until autumn 1975 were transferred into machine-readable form. New data are recorded on work sheets designed for immediate transcription into machine-readable form.
All bibliographic data are now stored on magnetic tape. The photo type set publication is now prepared. This bibliography will appear as Infoterm Series 2.

(2) Format for recording of bibliographic data in terminology.- Infoterm investigated a format for recording bibliographic data in terminology. Experiences gained with the international bibliography of standardized vocabularies served as a basis for this study. A pilot project to record the bibliographic data of the nonstardardized vocabularies of a small specialized field will be undertaken.

(3) World Guide to Terminological Activities.- One of the most important tools for the co-ordination of terminological activities in the world is a directory giving the terminological commissions, terminological documentation centres and terminology banks in existence. For this reason Infoterm prepared a Draft Guide on the basis of an inquiry made in 1974; this Draft Guide was distributed at the Infoterm Symposium. In autumn 1975 Infoterm continued this inquiry and distributed questionnaires to some 250 organizations.
The final version of this Guide appeared in August 1977 as Infoterm Series 4.

(4) Information and consultancy services

(4.1) Collection and analysis of terminological literature

Infoterm collects terminological documents and information from all over the world.
These documents and relevant information are being analysed and filed as part of Infoterm's documentation in order to be retrieved for information services.

(4.2) Answering of inquiries

Infoterm answers a great number of inquiries concerning terminology from all over the world and sends photocopies of the documents asked, if necessary.
The inquiries concern different terminological problems and range from the request to get informed on the existence of vocabularies and thesauri in specific fields, new developments in terminology, etc. to consultancy services regarding methods to be used for terminology projects.

(4.3) Consultancy services

During the past years the consultancy service increased continuously. Institutions from all over the world including developing countries are seeking information on the application of terminological principles and on the methods to be used in terminological documentation, in writing and by visiting Infoterm.

(5) Symposium on International Co-operation in Terminology, held in Vienna from 9 to 11 April 1975.- Since only a network of co-operating terminology preparing bodies and terminology documentation centres can cope with the present situation in terminology Infoterm invited terminological experts and institutions to this Symposium as a first step towards co-ordination in the field of terminology. The audience of the Symposium recommended that Infoterm elaborate a study on the development of a network for terminology.
The papers and discussions of this Symposium have been published as Infoterm Series 3.

(6) Visits, lectures and discussions.- For the co-ordination of terminological activities it is necessary to contact terminological institutions,

by writing and visits, and to inform them on new developments in the terminological field. For this purpose it is also necessary to attend meetings and to give lectures. Representatives of Infoterm attend the relevant meetings at national and international level and present papers on these occasions. They visit many terminology centres, disseminate the knowledge on the application of terminological principles and discuss with the staff terminological problems.

(7) Dissemination of the theory of terminology.- In the last years Infoterm has been intensifying its efforts to disseminate the knowledge on the theory of terminology by giving lectures and by holding a pilot course at the university of Vienna.

Close co-operation in this field with AILA has been started.

(8) Infoterm publications:

(8.1) WÜSTER, E. The Road to Infoterm. Two reports prepared on behalf of Unesco. Inventory of Source of Scientific and Technical Terminology. A Plan for Establishing an International Information Centre (Clearing-house) for Terminology. München: Verlag Dokumentation, 1974, 141 p., A5. Infoterm Series 1. DM 36.-

(8.2) FELBER, H; KROMMER-BENZ, M; MANU, A. International Bibliography of Standardized Vocabularies / Bibliographie internationale des vocabulaires normalisés / Internationale Bibliographie der Normwörterbücher. München: Verlag Dokumentation, approximately 750 p., A4. Infoterm Series 2. Appears 1978.

(8.3) INFOTERM. First Infoterm Symposium. International Co-operation in Terminology / Premier Symposium d'Infoterm. Coopération internationale en Terminologie. München: Verlag Dokumentation, 1976, 332 p., A5. Infoterm Series 3. DM 48.-

(8.4) KROMMER-BENZ, M. World Guide to Terminological Activities / Guide mondial des activités terminologiques. München: Verlag Dokumentation, 1977, 311 p., A5. Infoterm Series 4. DM 68.-

(8.5) In addition to the Infoterm Series the I n f o t e r m N e w s l e t t e r is published as part of "Lebende Sprachen". The Newsletter reports periodically about the development of international and national activities in the field of terminology.

5 Co-operation and planning in terminology

Terminology is basically a tool for improving communication. It can only be useful if it responds to user needs and is widely adopted. It is not the exclusive prerogative of small groups but must, in order to fulfil its purpose, be acceptable by the largest possible number of users for which it has been prepared. In order to be effective, i.e. economical, precise, and appropriate in communication it must be based on careful selection, sound theoretical principles and a through understanding of communication objectives.

Preparation of terminologies is therefore an expensive and time-consuming effort which, in order to have the greatest impact must be closely coordinated nationally and internationally. Only in this way can the preparation of conflicting and therefore misleading terminologies be avoided.

Co-ordination and planning has also economical advantages. By a division of labour costs can be reduced and the quality of the output can be improved. The diversity of specialists involved in the elaboration of terminologies and the substantial documentation required for reliable work is in many cases beyond the capacity of a single national or subject organizations.

5.1 Need for co-operation

Section 2 of this report outlines the diversity of separate activities in terminology work which need co-ordination to make terminology work as a whole more efficient.
In response to the growing need for co-operation Infoterm held a symposium on international co-operation in terminology in Vienna from 9 to 11 April 1975 (see 4(8.3)). This was to be the first step towards world wide co-ordination [122]. Co-operation is required in the different areas of terminology work.

5.1.1 General theory of terminology.- At the First European Symposium on Specialized Languages in Vienna from 26 to28 August 1977 the training on the "General theory of terminology" at universities was recommended. AILA in co-operation with Infoterm is going to study the elaboration of a course of the "General theory of terminology" for university level and seminars of teachers. A careful study of the elements of such a course is made by AILA, so that special courses and seminars can be composed of elements according to a particular need.
For this purpose AILA will discuss this matter at the next AILA-Congress to be held in 1978 in Montreal (Canada).

5.1.2 Terminological and lexicographical principles.- In this field co-operation has been assured since 1952 by ISO/TC 37 "Terminology (principles and co-ordination)".

5.1.3 Preparation of terminologies.- In some branches of science and technology co-operation in terminology projects is well organized at national and/or international level by competent national or international organizations. Co-operation could be intensified by better information on terminology work. A network of terminology documentation agencies to be developed through the activity of Infoterm is expected to promote the preparation of terminologies by informing terminology creating bodies on:

(1) Application of terminological principles for terminology projects

(2) terminological activities in their respective and neighbouring fields

(3) terminology projects in preparation or planning

(4) terminology experts working in their fields

(5) terminology documentation in existence in their fields

(6) training of experts for terminology work

5.1.4 Documentation in terminology.- Owing to the fact that all languages and subject fields are concerned, the volume of terminological literature to be registered, analysed and processed would be too big for a central institution such as Infoterm, since it would require a staff of very diversified skills as regards subject fields and languages, and an enormous budget. Therefore, Infoterm proposed the establishment of a network of terminology agencies at the Symposium on international co-operation in terminology in Vienna.

The solution rests with decentralization of recording and analysis of terminological literature, i.e. in division of labour and co-operation. Thus, cost for individual terminology agencies would be reduced for all partners within such a network.

5.1.4.1 Terminology banks.- Among terminology banks the willingness to co-operate has been repeatedly expressed. Co-operation will consist of division of labour in recording of terminological data and exchange of holdings of terminological data.

5.1.5 Training.- The Commission for Terminology and Lexicography of the International Association of Applied Linguistics (AILA) will be responsible for organizing better co-operation in research and training (see 5.1.1).

Terminology seminars are already held in Canada, Federal Republic of Germany, German Democratic Republic, Sweden (in co-operation with Denmark, Finnland and Norway), South Africa, USA and USSR.

6 Project of a network

6.1 Aims of TermNet

The need for co-operation in terminology was described in section 5.1. At present co-operation exists to a certain degree in isolated fields (see above). However, it is not sufficient and not co-ordinated enough for the greatest benefit to be drawn from those in need of terminology information. Therefore co-operation will have to be improved, co-ordinated, and planned, i.e. management is required.

In the following measures are proposed which will have to be taken to create the necessary co-operative structures for terminology work, i.e. for the establishment of a network. The network is called TermNet.
TermNet should function as an individual unit (sub-system) in the General Information Programm (UNISIST) of Unesco.

TermNet is intended to encourage:

- co-operative action in the preparation of terminologies, i.e. division of labour for the preparation of terminologies among expert groups and competent professional organizations, and exchange of terminological results;
- co-operative action in documentation of terminology, i.e. division of labour in the collection and analysis of terminological literature, and recording of bibliographic data, and the exchange of results. The terminology banks are also included here.

This means:

(1) to collect and/or record (in conventional or machine-readable form) by a co-operative action of all those joining TermNet bibliographical data of the existing terminological literature such as:
- standards, rules, guidelines, methodes of terminology work (terminological and lexicographical principles)
- articles on theory of terminology and terminology work in general
- specialized vocabularies
- books and periodicals
- bibliographies on terminological matters

and to exchange these data with TermNet members*

(2) to prepare by a co-operative action of all those joining TermNet in conventional or machine-readable form bibliographies such as:
- International bibliography of standardized vocabularies This was prepared by Infoterm and is intended to be kept up to date within ISONET, i.e. ISO/INFCO

* Whether TermNet will have members or partners will depend on the decision taken by those interested to co-operate in TermNet

- International bibliography of monolingual and multilingual specialized vocabularies (to be prepared in parts "individual subject fields")
- International bibliography of theory of terminology and terminology work
- International bibliography of periodicals devoted wholly or partly to terminological and related problems etc.

to keep them up to date, exchange them with TermNet members and if possible publish and disseminate them within their sphere of competence or in common with other TermNet members.

(3) to collect and/or record in conventional or machine-readable form by a co-operative action of all those joining TermNet all data on terminology work and training, particularly data on:

- terminology committees in action
- existing or planned terminology documentation agencies
- current or planned terminology projects
- planned terminology courses or seminars
- terminologists (with indication of subject field) and terminology documentalists

and to exchange these data with TermNet members

(4) to create an interconnexion for the collection and recording of terminological data in conventional (card file) or machine-readable form (automated terminology banks) by a co-operative action of all those joining TermNet.

(5) to combine the efforts of all those TermNet members wanting to prepare specialized vocabularies in particular subject fields. Not only co-operating authors of specialized vocabularies but also processors of terminological data (terminology banks) will benefit from co-operation. Authors of specialized vocabularies can have the vocabularies prepared with modern computer techniques, the terminology banks can store updated terminological data for its users.

6.1.1 The evaluation panel for Infoterm's project of a network (Vienna 19-21.Oct.1977) has come to the following conclusion:

- Terminology work is carried out at every level of human activity and is fundamental to information and documentation.
- The complexity of this work and the diversity of people engaged in it often leads to duplication of work and worse to the erection of barriers to communication quite contrary to the purpose and justification of terminology as a field of study.

- The recognition of the importance of the widest possible consultation in this work and of the widest possible dissemination of its results has led to cooperation among many different organisations at a language or a subject level or both.
- This cooperation has accelerated over recent years as the need to communicate across national, language and subject boundaries has increased.
- As the sole agency created for the purpose of liaison and information at international level without language and subject restrictions, Infoterm already has contacts with the vast majority of organisations concerned with terminology.
- Infoterm is thus in an exclusive position to assist in the establishment of closer links among such organisations.
- The type and degree of collaboration is ultimately a question for each individual organisation, but Infoterm can act as catalyst to bring about joint enterprises. In some small measure Infoterm may itself engage in joint projects with individual or groups of organisations.
- From its experience Infoterm can demonstrate that cooperation in a network of relevant organisations can lead to greater efficiency and therefore reduction of cost. Efficiency can be achieved through division of labour, wider agreement on terminology and wider diffusion of the agreements reached.
- The establishment of an open-ended, flexible network is the natural development for Infoterm. Only in this way can it continue to fulfill its role in the quickly changing and expanding field of terminology and in the improvement of its information and documentation service.
- Other organisations look to Infoterm for leadership in the direction of closer cooperation through the creation of a network.
- The general conditions of such a network are incorporated into the re-drafted study.

Infoterm will assist TermNet members in their effort to coordinate their activities with regard to other members by

(1) disseminating information
(2) acting as a documentation centre

(3) advising on cooperation and coordination of efforts

(4) providing links to other international organizations

6.2 Members of TermNet

The network should include the following members

6.2.1 Infoterm

Infoterm is intended to function as international focal point for coordination

6.2.2 International or reginal specialized terminology centres

The international or regional specialized terminology centres function as a terminological focus for a certain discipline or mission such as electro-engineering (IEC), welding (IIW), meteorology (WMO), LEAT, etc.

6.2.3 Reginal sub-networks

Regional sub-networks will be useful for regions where structures and languages allow it. Such a sub-network is for instance NORDTERM (Denmark, Finnland, Norway, Sweden) or the Conseil International de la Langue Française (CILF), which comprises 24 French speaking countries.

6.2.4 National terminology centres

National terminology centres should co-ordinate the terminology work of the countries concerned. Examples for such centres are the Tekniska Nomenklaturcentralen (TNC) in Sweden, the Association française de terminologie (AFTERM) in France etc.

6.2.5 Individual terminology agencies

The types of terminological agencies are often very different in structure and organization according to the user needs they serve. Many terminological agencies are either discipline or mission oriented or language oriented.

6.2.6 Terminology banks

Co-operation among terminology banks is already developing. Some contracts on the exchange of terminological data among terminology banks exist and other bilateral arrangements will undoubtedly be made.

6.3 Implementation of TermNet

National and international organizations concerned with terminology need updated bibliographic data of terminological literature and other data of terminology work and training available in the sphere of their activity and neighbouring fields. Therefore they collect, analyse, record in bibliographic form the terminological literature they need. Most of these organizations are willing to co-operate in terminology preparing and/or documentation which will save them money and manpower. Therefore co-operation will have to be encouraged and organized. In order to facilitate co-operation Infoterm prepared the "World Guide to Terminological Activities, which is a very useful tool. In continuation of this effort Infoterm will send a questionnaire to organizations concerned with terminology requesting to list areas in which they seek co-operation and are willing to provide terminological

information and material. Future national focal points such as AFTERM, HISPANOTERM, NORDTERM should join this inquiry. The review of the analysed questionnaires will then be discussed within Infoterm's Advisory Panel (see section 6.7). The needs, contributions and services will then have to be discussed with those willing to join TermNet with a view to achieve harmonization.

The evaluation panel has proposed the following procedure and timetable:

A communication should be sent as soon as possible to a selected number of likely members inviting them to join TermNet.

This communication should include:

(1) The amended study on the development of a network for terminology information and documentation

(2) A full description of the proposed structure, the services and benefits provided by TermNet.

(3) A statement of the functions of the advisory panel.

(4) A questionnaire requesting future partners to list areas in which they would wish to seek collaboration and any suggestion which might assist Infoterm in improving the network.

Once TermNet is fully agreed upon, the financial implications of its operation will have to be studied carefully by the members. As a basis of discussion item 8 "Financial Aspects" of the study "Feasibility study on the establishment of an ISO Information network" might be used [123]. This study was prepared by ISO experts with the support of Unesco under the UNISIST Programme. It examines the advantages and disadvantages of the possible systems of pricing.

6.4 Infoterm's contribution to TermNet

Infoterm can offer services in the following areas (see also section 4)

(1) documentation
(2) information
(3) co-ordination
(4) consultancy
(5) training
(6) research

Infoterm has demonstrated its ability to provide services in all these areas and there is growing demand for them so that Infoterm feels unable to satisfy all requests without the assistance of TermNet members who are themselves beneficiaries from Infoterm services. A number of services may, in fact, be more adequately provided by TermNet members who in return benefit by gaining influence in their chosen language and subject fields and by the increased services Infoterm can then provide for them.

6.4.1 Documentation . - Infoterm has provided fundamental documentation and is in possession of substantial materials which its small scope prevent it from preparing for practical use and wider circulation. Some documentation needs continuous up-dating to be of lasting value, and the general usefulness of this work suggests that it is best carried out by Infoterm in co-operation with TermNet members for the benefit of all organisations concerned with terminology.

6.4.1.1 Existing documents

(1) World Guide to Terminological Activities (= Infoterm Series 4). This work should be converted into machine readable form so that it can be updated regularly in co-operation with other TermNet members (See also 4 (3)).

(2) International Bibliography of Standardized Vocabularies (= Infoterm Series 2). This bibliography is in machine readable form and can be kept up to date regularly. A co-operative action is intended within ISO/INFCO. A special format of description has been devised which is more widely applicable. (See also 4(1)).

6.4.1.2 In preparation

A model for a terminology documentation agency.

6.4.1.3 Documentation for joint projects among members with or without assistance by Infoterm

(1) International Bibliography of non-standardized monolingual and multilingual specialized vocabularies.
In preparation for this task Infoterm has prepared a bibliography of terminological bibliographies. The format mentioned under 6.4.1.1(2) above is suitable for this task. Infoterm has additional bibliographies not readily available elsewhere and which it offers for this project.

This bibliography is conveniently divided into parts of individual subject fields and is thus eminently suitable for a cooperative effort.

Enough material for such a bibliography exists already, for instance:

- bibliography of interlingual scientific and technical dictionaries published by Unesco [100]
- international bibliography of dictionaries published by Verlag Dokumentation
- a bibliography of technical vocabularies for the French language on magnetic tape (Régie de la Langue Française, Quebec)

- a bibliography of technical vocabularies for the Danish language [101]
- a bibliography of technical vocabularies published in Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Rumania, USSR[102], which is kept up to date
- lists of technical vocabularies, which are periodically published in relevant periodicals (LES, Meta, etc.)

and many other bibliographies

(2) Materials towards an International bibliography of terminological articles

(3) Materials towards the theory of Terminology.

(4) Materials towards training courses in the theory of terminology.

(5) Materials towards terminological and lexicographical principles, methods, guidelines etc. Infoterm has published in 1977 a bibliography as Infoterm News Letter 4.

(6) Materials for an international key to terminology.

(Note: These documents are part of the estate of the late Professor Wüster and can be made available through Infoterm).

6.4.2 Information. - Infoterm is already disseminating information directly to enquirers and indirectly through a number of relevant journals which reprint the Infoterm News Letter or parts of it.

TermNet can be provided on a regular basis with information on:

(1) activities in standardization of terminology

(2) additions to the World Guide (6.4.1.1(1))

(3) additions to the International Bibliography of Standardized Vocabularies (6.4.1.1(2))

(4) research projects of TermNet members and non-members

(5) surveys on special topics, e.g. Infoterm has prepared a list of ISO and national standards and recommendations on terminological principles and non-standardized guidelines for terminology, terminological lexicography and thesauri (Infoterm News Letter 4), a list of terminological data banks (Infoterm News Letter 1), a list of publications on terminological data banks (Infoterm News Letter 1).

(6) new terminological publications.

This information will be produced in form of a regular News Letter to all TermNet members. The volume of information does, of course, depend to some extent on the co-operation of members.

6.4.3 Co-ordination. - Infoterm offers its assistance for liaison among members and for channelling requests from non-members for information, documentation or co-operation.

6.4.4 Consultancy. - At the request of members Infoterm advises on topics of its special competence, e.g. application of terminological principles and methods of terminological lexicography application of documentation methods and formats, classifications.

6.4.5 Training. - Infoterm accepts trainees for limited periods.

6.4.6. Research. - Infoterm offers its considerable bibliographic resources to researchers. Its library includes as Infoterm department Wieselburg the library of the late Professor Wüster, one of the largest collections of its kind.

6.5 Members' benefit from TermNet

(1) Services from Infoterm (see above).

(2) Services directly from other members or through the intermediary of Infoterm.

As terminologies are intended to improve communication all terminology processing and preparing bodies are interested in the widest possible divulgation and adoption of their terminologies. It is therefore in their interest to engage in co-operative ventures which guarantee wider acceptation of their work.

Co-operation may also lead to an improved quality of output since single organisations may not have the language, subject or processing expertise available through joint enterprises.

Co-operation finally reduces cost through the sharing of labour, information and documentation as well as the output of terminology work.

These aims are achieved by:

- Information about other members:
  viz: terminology projects
  existing terminologies
  existing data on sources for terminology
  reports on projects.
- Advice on work through the exchange of experts
- Joint projects (terminological or bibliographical) i.e. the solution of problems which a member could not or would not tackle in isolation.
- Exchange of trainees and research facilities.

6.6 Demands on TermNet members and restraints they would have to accept in order to maximise the opportunities for co-operation

6.6.1 In order to continue its documentation and information services Infoterm will require that TermNet members regularly provide Infoterm with information about their planned, ongoing and completed activities, as well as bibliographical data on terminological literature such as vocabularies, papers, books, periodicals in form of lists, microfiches etc. and other data on terminological sources and training.

6.6.2 Technical requirements. - Co-operation is only possible if international standards and unified methods are applied, whenever possible.

6.6.2.1 For joint terminology projects and exchange of terminological data the ISO Standard and Recommendations may provide an adequate common ground (see 2.2.1).

6.6.2.2 The result of terminological documentation can only be exchanged if an output/input compatibility exists with a minimum need for conversion. ISO Standards for bibliographic description, transliteration, exchange format, reprography etc. are available.

The following standards are recommended:

6.6.2.2.1 Standards for terminological literature documentation. -

ISO/TC 46 "Documentation" has prepared many ISO Recommendations and ISO Standards for documentation some of them are for the exchange of information in manual, mechanized and automated systems. Those relevant for the network to be developed are mentioned below:

(1) Documentation

(1.1) ISO 690-1975 Documentation - Bibliographical references - Essential and supplementary elements

(1.2) ISO 2145-1972 Numbering of divisions and subdivisions in written documents

(1.3) ISO 3166-1974 Codes for the representation of names of countries

(2) Transliteration

(2.1) ISO/R 9-1968 International system for the transliteration of Slavic Cyrillic character

(2.2) ISO/R 233-1961 International system for the transliteration of Arabic characters

(2.3) ISO/R 259-1962 Transliteration of Hebrew

(2.4) ISO/R 843-1968 International system for the transliteration of Greek characters into Latin characters

(2.5) ISO/DIS 2805, 1975 Transliteration of alphabets of non-slavic languages of the Soviet Union using Cyrillic characters

ISO/DIS 3602, 1975 Romanization of Japanese

(3) Automation in documentation

ISO 2709-1973 Documentation - Formats for bibliographic information interchange on magnetic tape

(4) Reprography

(4.1) ISO 2707-1976 Microcopying - Transparent A6 size microfiche of uniform division - Image arrangements No. 1 and No. 2

(4.2) ISO 2708-1976 Microcopying - Transparent A6 size microfiche of variable division - Image arrangements A and B

Infoterm has developed a format for the recording of bibliographic and linguistic data of terminological standards in machine-readable form for the International bibliography of standardized vocabularies, which is based on ISO 690 "Bibliographic references - Essential and supplementary elements" and ISO/R 639 "Symbols for languages, countries and authorities". With slight modifications this format can also be used for the recording of technical vocabularies and terminological literature.

6.6.2.2.2 Classification . - For terminological literature as well as data documentation the use of a common classification would greatly facilitate the exchange of bibliographic references and terminological data. Furthermore, in joint undertakings of TermNet members, for instance for the publication of international bibliographies, there would be no need to convert the notations of different classifications into a standard one. At present some terminology documentation centres use a broad classification scheme, others use thesauri [124] [125] [126] Therefore an investigation should be made into the usefulness of the existing "Broad system of ordering" [127], which is being prepared by UNISIST, as a switching mechanism for terminology documentation.

At present the possibility of automatic conversion of the notations of one classification into another is being investigated.

6.7 Advisory panel

For the implementation of the TermNet Project an Advisory panel will be constituted.

6.7.1 Membership: Infoterm and Unesco in consultation with members of TermNet will appoint a small advisory panel from among,

- TermNet members
- Other organisations concerned with terminology
- Experts in terminology processing and documentation and information science.

Infoterm may invite special advisors to assist on particular issues.

6.7.2 Functions: The panel will advise on

(1) organisational matters such as

- the structure of the existing network
- the links between Infoterm and other members

- modalities of membership
- further development of the network by
  - the intensification of links between members
  - the intensification of links between members and Infoterm
  - the expansion of the network

(2) activities, e.g.

priorities of Infoterm activities,
formulation of joint projects between Infoterm and members,
proposals for projects, joint activities, and other forms of collaboration made by members.

Note: (1) It is expected that with the consolidation of the network a users' committee will be formed to take over most of the functions of the advisory panel.

(2) The first function of the advisory panel will be to analyse the responses to Infoterm's invitation to constitute a network, and to help Infoterm to formulate more concrete conditions for the network.

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